



# Seed Bull to Enhance Smallholder Dairy Production

## Introduction

Dairying provides bread and butter for many farmers of Bangladesh. Quality and meritorious breeding bulls as a source of seed is an essential input for the dairy farmers. Through the financial assistance of PIU-BARC the sub-project is being implemented by Bangladesh Agricultural University. Piloting an innovative cattle breeding program to produce genetically superior seed bulls to enhance smallholder dairy production is the main goal of the sub-project.

## Rationale

A gap exists between demand and supply of quality dairy seeds bulls to produce semen is considered as the major constraint in enhancing dairy productivity. The infrastructure and technical know-how at national level still lag far behind in quality and high merit seed bull production to support dairy industry of the country. Hence, production of quality and known merit dairy seed bull is a demand of time. But cattle seed production is inherently a long-term and complex phenomenon due to lengthy generation interval, small herd size, absence of selection program, lack of pedigree and performance recording system and hence incurs huge cost therein. Alongside, farmers are the principal custodians of cattle population of the country and therefore attempt to produce seed bull through farmer participatory system is justified and economic.

## Sub-Project Location

Pilot activities were carried out in the dairy cattle herds of farmers' around 6-8 kilometer radius of Bangladesh Agricultural University (BAU) Artificial Insemination Centre, Mymensingh since April 2010.

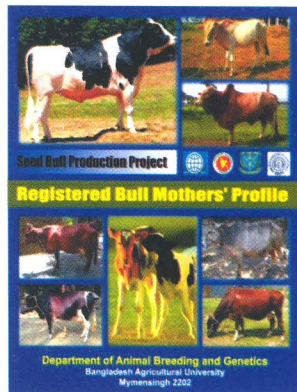
## Approach & Methodology

● **Baseline Survey**- A baseline survey was conducted to collect the socio-economic and technical information following stratified random sampling method covering a total of 203 households (HH) at 61 villages of Mymensingh district within 7 km perimeter of Bangladesh Agricultural University with a view to assess the status of livestock with prime consideration on cattle. Milk sale and consumption (85.31%) was found as main objective behind cattle rearing. More than fifty percent farmers (52.45%) preferred Deshi cattle while 41.26% preferred crossbred cattle. Main reasons behind preference for Deshi cattle were easy management (24.48%) and lower feed requirement (12.59%) whereas, important reason behind crossbred preference (35.66%) was higher milk production. Semi-intensive method of rearing was found mostly accepted (77.62% of cattle owners) among the farmers. Production performance of available genotypes was not satisfactory. Average milk yield of Deshi and crossbred genotype were found as  $1.72 \pm 0.80$  and  $6.65 \pm 5.05$  liter per day respectively. Farmers were found to be unsatisfied with the production performance of available crossbred genotypes. Artificial Insemination (AI) was preferred (61.06%) over natural service (38.94%). For AI, semen of Holstein Friesian (43.07%) was preferred; Deshi was the second most choice (32.12%). Most of the farmers (82.9%) had no idea about quality and merit of semen, they are being offered by AI workers. Disease problem was quite high particularly in crossbred animals and the vaccination schedule was found to be practiced by 38.46% of HH only. Among different problems identified by the respondents- seed / semen of unknown genotype, inefficiency of AI technicians, high cost for AI and lower fertility rate etc. were common. Most of the farmers (95.80%) were found to be interested to form development association for meritorious seed bull production and showed keen interest to get training on scientific aspects of cattle husbandry and disease management. A final full report on baseline survey was prepared.



● **Farmer Consultations-** Cattle owners from the project area were invited to series of open discussion and consultation to share the purpose of the sub-project and assess their need. A total of 8 formal consultations were organized to date. A general agreement as to their willingness to participate in the seed bull production in a contractual system was reached. Moreover, two farmers' cooperatives were formed namely Badekalpa and Chalakandi in the sub-project area.

● **Elite Cows/Heifers Registered & Farmers Catalogued-** Superior cattle genetics in the sub-project area was identified through collection of in-depth information and performance of individual elite cows/heifers to assess their detail profiles and merit. Using the generated information, elite cows of different grades were selected, registered, individually, identified through ear tags and neckbands and finally a "Registered Bull Mothers' Profile" was prepared. As of today a total of 158 cows were identified and individually tagged with logo. The genetic constitution of the registered cows/heifers were 75% Holstein Friesian (HF)-25% Deshi, 62.5% HF-37.5% Deshi, 50% HF-50% Deshi, 50% HF-25% Sahiwal-25% Deshi and 100% Deshi. Also, the address, contact details and photographs of 80 farmers were catalogued who owned registered cows / heifers that would be potential mothers of intended seed bulls.



● **Herdbook Opened-** A small book where detailed information (e.g. ID no., date of birth, sire, dam, date of maturity, production performance, reproduction efficiency, disease incidence, vaccination schedule etc.) of an animal is being recorded in written form. Herdbooks were opened for every registered cows / heifers in the sub-project area.

● **Pedigree Breeding Started-** Insemination of registered cows/heifers with superior dairy genetics (semen from bulls of known identity, source, genotype and genetic merit) was performed by Artificial Inseminator. Data on reproduction issues were being instantly recorded in Herdbook (one copy kept in farmer's house and another kept with the Animal Recorder) and being regularly updated and maintained in computer database.



● **Calf Identification and Registration-** The calves born (males and females) through the designated mating between elite cows/heifers and known semen were identified after birth, neck banded, ear tagged and registered within a week with full details including pedigree (sire and dam). Special attention was given to male calves which will be potential future seed bulls with known pedigree. Meanwhile, a total of 43 such calves (28 males and 15 females) were born from the registered cows and heifers, of which 40 are available to date in the sub-project area.



● **Milk and Other Trait Recording-** Test day (morning and evening) milk yield data were recorded on fortnightly basis. Moreover, all lactation parameters of elite cows were being recorded properly. Alongside, all other information demanded by the Herdbook such as pedigree, date of birth, weight at birth, age and weight at weaning and maturity, scrotal circumference, testis size, disease incidence etc were being recorded through periodic visit to farmers' home by animal recorder who maintained data with the assistance of animal owner.



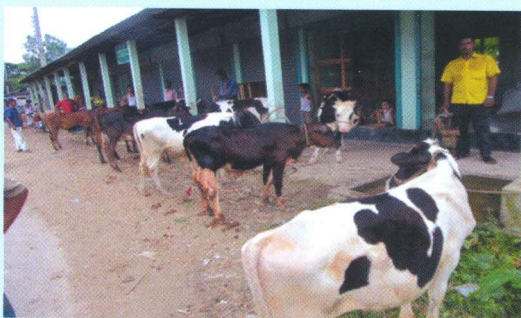
● **National Workshop on Seed Bull Production-** A national workshop was organized on 27 December 2011 at Bangladesh Agricultural University, Mymensingh, to focus and create mass awareness about the sub-project (<http://www.theindependentbd.com/national/workshop-on-making-of-quality-dairy-seed-bull-held-atbau.html>). Participants were from BAU (including MS and PhD students), DLS, BRAC, PIU-BARC, BLRI, journalists of different news and print media and most importantly the farmers from sub-project area. Decisions taken in the workshop included: (i) The valued project should continue its activities; (ii) Necessary steps should be taken so that the project could be continued for longer period; (iii) The project should extend its working area all over the country and (iv) Two portable milking machines be set under two farmer cooperatives for the benefit of dairy farmers.

● **Organized Seed Calf Rallies-** Two events of rallies were organized using the sub-project born pedigreed seed bull calves (Bade Kalpa Seed Calf Rally was held on 28.4.2012: [Bdnational.com](http://www.bdnational.com), 02 May, 2012,, [http://www.mobile.bdcampusnews.com/index.php?s=5&news\\_id=2335](http://www.mobile.bdcampusnews.com/index.php?s=5&news_id=2335)) and Chalakandi Seed Calf Rally was held on 1.5.2012: The Daily Independent, Friday, 04 May 2012, <http://theindependentbd.com/national/107793-fair-stresses-on-healthy-bull-in-mymensingh.html>) for farmer and stakeholders' demonstration as well as awareness building. Judged by a panel of experts, prize was distributed among the good farmers.



● **Certification of Seed Bulls-** Potential candidate bulls will be selected based on the pedigree, weight, growth rate, body conformation, leg and hoof strength, scrotal measurements, parasitic load, disease incidence, karyotype, semen quality and quantity, and dam's status on productive and reproductive potentials; particularly on milk yield, lactation length, conception rate, incidence of abortion, dystocia, TB and mastitis etc. Compiled information for each registered bull calf will be submitted to the Livestock Seed Certification Committee (LSCC) for decision. Meanwhile, a total of 26 potential young bulls are waiting to be placed in LSCC for decision.





## Dissemination at Farmers Level

● **Farmer's Training-** Training on scientific cattle husbandry, record keeping and dairy production system was offered to the elite cattle owners. Copies of "Cattle Rearing Manual" was prepared and distributed among the farmers as ready reference. Capacity building of a total of 210 farmers in a total of 4 training sessions were conducted to date. Repeated trainings on the importance, contents and methods of maintaining Herdbook were arranged for both the Animal Recorder and the farmers.



● **Inputs and Services Offered to Registered Animals-** Inputs and services like year round vaccination, deworming (twice a year), AI using superior semen, fodder seeds and cuttings, necessary treatment, medicine, feces test, feeding and management advice, testing for tuberculosis (TB) and mastitis, management tools for mastitis control were provided on routine basis in the sub-project area. Copies of "**Registered Bull Mothers Profile**" was prepared and distributed among the stakeholders (farmers, livestock researchers, academicians, and government extension people, breeding service providers, NGOs and development partners).

## Success Story

Mastitis of HYV cows was a big threat in the sub-project area (incidence was 55%). Due to modalities and management tools applied in the sub-project area a significant reduction in mastitis (4%) occurrence was observed. More importantly, less incidence of repeat breeding, use of appropriate semen, fewer outbreaks of contagious diseases resulting in less death of calves and cows, sudden sale of problematic cows (repeat breeder and mastitis affected) has gone down through these sub-project interventions. All these positive changes came due to built awareness vehicled through two formed "**Seed Bull Production Societies**" and have clearly increased their dairy farm profitability.



## Lessons Learned

The concept of merit and quality seed bull was unknown among the dairy farmers. This sub-project helped the concept implanted in the minds of farmers and associated stakeholders. It has become evident that animal registration and data recording through Herdbook in a farmer participatory approach is feasible in Bangladesh to offer quality dairy seed bulls.

## Way Forward

Based on the outcome of the work done so far, farmers demand, decisions of national workshop and review workshop, sub-project need to be continued and up scaled in more dairy concentrated areas of Bangladesh.

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